

lesson 6: you want flies with that?

estimated time

1½–2 hours

science GLEs

EC.2.A.3.d. Predict the possible effects of removing an organism from a food chain

EC.2.A.4.c. Categorize organisms as predator or prey in a given ecosystem

vocabulary

Predators

Prey

lesson objectives

1. Define predator and prey.
2. Categorize organisms as predator and/or prey in a given ecosystem.
3. Identify the roles of predators and prey in an ecosystem.
4. Explain why predators and prey are important to energy flow in a food chain.
5. Predict the possible effects of removing an organism from a food chain.
6. Give examples of how humans as predators affect an ecosystem.

essential questions for the lesson

1. How can an organism be both predator and prey?
2. Why is it important to have both predators and prey in an ecosystem?
3. What role do humans as consumers play in an ecosystem?

teacher notes

Students should have read Chapter 6, “You Want Flies With That?,” on pages 28–31, in their student books prior to engaging in these activities.

Activity 6.3 uses all three sets of *Ecosystem Cards* at one time. A comprehensive alphabetized key is included as Appendix I.

outline of answers to objectives

See following page.

essential activities

Activity 6.1: Predators and Prey in the Food Chain

Activity 6.2: Predators—They’re Part of the Picture

Activity 6.3: Humans—At the Top

optional activities

Optional Activity 6.A: Hike Through the Regulations

summary

Predators hunt other animals for food. A prey animal is a predator’s food, but there are animals that are both predators and prey. The speckled kingsnake on pages 28 and 29 in the student book is an example of an animal that is a predator when hunting the prairie vole for food but is also prey when hunted by the hawk. People who catch fish and hunt deer and turkey for food play the role of predator in an ecosystem.

Why do some people think of predators as fearsome and frightening animals and think of prey animals as gentle and cute?

outline of answers to objectives—lesson 6

1. Define predator and prey. (pages 28, 29)
 - a. Predators are animals that hunt other animals.
 - 1) All carnivores are predators.
 - 2) Some carnivores are also prey.
 - b. Prey are animals that are hunted by other animals.
 - 1) All herbivores are prey.
 - 2) Some carnivores are also prey
2. Categorize organisms as predator and/or prey in a given ecosystem. (page 29)
 - a. Pond examples
 - 1) Tadpole is prey for a fish (a predator), which is prey for a great blue heron.
 - 2) Insect is prey for a water strider (a predator), which is prey for a fishing spider (a predator), which is prey for a green frog (a predator), which is prey for a northern water snake (predator). [An example from the pond poster]
 - b. Forest examples
 - 1) Insects are prey to a carpenter ant (a predator), which is prey for a spider (a predator), which is prey for a rough green snake (a predator), which is prey for larger snakes (predators).
 - 2) Fox squirrel is prey to a great horned owl (a predator). [An example from the forest poster]
 - c. Prairie examples
 - 1) An insect is prey for a prairie bird (a predator), which is prey for a hawk (a predator).
 - 2) A prairie vole is prey for a speckled kingsnake (a predator), which is prey to a hawk (a predator).
 - 3) A bobolink is prey to a speckled kingsnake (a predator), which is prey for a northern harrier (a predator). [An example from the prairie poster]
3. Identify the roles of predators and prey in an ecosystem. See *Activity 6.1: Predators and Prey in the Food Chain*.
4. Explain why predators and prey are important to energy flow in a food chain. See *Activity 6.2: Predators—They're Part of the Picture* (page 30)
 - a. Prey pass energy to predators up through the food chain.
 - b. A balance between predators and prey is important to help control animal populations, keep food chains strong and ecosystems healthy and balanced.
5. Predict the possible effects of removing an organism from a food chain. See *Activity 6.1: Predators and Prey in the Food Chain*.
6. Give examples of how humans as predators affect an ecosystem. (pages 30, 31)
 - a. Humans are consumers at the top of many food chains.
 - b. Some humans are herbivores (vegetarians), but most humans are omnivores.
 - c. In the predator role, humans help control animal populations and keep ecosystems healthy and balanced.
 - 1) Insects are prey for bluegills (predators), which are prey for humans (predators).
 - 2) Junebug grubs are prey for turkeys (predators), which are prey for humans (predators).
 - 3) Deer (an herbivore) are prey for humans (predator).
 - 4) People who hunt and trap raccoons reduce the threat of distemper and help keep the raccoon populations healthy and balanced.

activity 6.1 : predators and prey in the food chain

estimated time 30 minutes

objectives

Students will be able to

1. Define predator and prey.
2. Categorize organisms as predator and/or prey in a given ecosystem.
3. Explain why predators and prey are important to the energy flow in a food chain.
4. Identify the roles of predators and prey in an ecosystem.
5. Predict the possible effects of removing an organism from a food chain.

teacher preparation

Students should have read Chapter 6, “You Want Flies With That?,” on pages 28–31, in their student books prior to engaging in these activities.

This is an outdoor activity and will require a large, open area. This activity will require individual use of all three sets of *Ecosystem Cards* **with the decomposer and scavenger cards separated out**. Choose or have students choose which set of *Ecosystem Cards* they would like to use first.

This activity will introduce the concept of organisms as predators and/or prey and will incorporate this concept into the food chain for the first time. Repeat the activity for the other two ecosystems during the same or future class sessions. Repeating the activity with each of the three sets of *Ecosystem Cards* will reinforce the concept as well as reinforce student understanding of which organisms belong in which ecosystem (necessary for MAP test preparation). Understanding this will be very important when all three sets of cards are combined and used in the culminating *Activity 6.3* which will draw upon and pull together all of these concepts.

NOTE: At this point, many students may have grasped the concepts of food chains and have demonstrated a high level of understanding and of competency during Lesson 5 activities. From this point on, all activities involving the creation of student food chains will omit detailed procedures (such as those provided in Activities 5.1, 5.2 and 5.3) for the creation and assessment of food chains, and students will be instructed to work together independently from the teacher to create and to assess food chains. These changes might create a bit of chaos at first, but if students do understand the concepts and the process, it could also help to change things up and increase student interest and fun.

Also at this point, the use of yarn is optional. When yarn is not used, students should be instructed to stand in straight, clear rows or chains that radiate from the sun.

[However, if students would benefit from reinforcement of basic food chain concepts and detailed procedures, refer to and follow the procedures listed in Lesson 5 (*Activity 5.1* for the pond ecosystem; *Activity 5.2* the forest ecosystem; *Activity 5.3* for the prairie ecosystem) eliminating references to decomposers and scavengers. Have students continue to link together with the balls of yarn, if necessary.]

materials

Science notebooks

Pencils

Thermometers

Pond Ecosystem Cards/Forest Ecosystem Cards/Prairie Ecosystem Cards (with decomposers and scavengers separated out)

Big Charts

10–15 balls of yarn (optional)

procedure

1. Have students complete their science notebook headings and take and record outside air temperature.
2. Shuffle and distribute the chosen set of *Ecosystem Cards* randomly to students.

3. Instruct students to read their cards carefully and to work together to create as many food chains as possible, incorporating as many organisms as possible into each chain. Prompt them with procedures used in Lesson 5 when necessary. Students should stand in clear, straight rows radiating from the sun.
4. Once as many students as possible are linked into chains, have organisms in each chain state what organism they represent and have unlinked students assess each chain. Incorrectly linked organisms should step aside, and any of the formerly unlinked students may replace them when possible.

Q. Which ecosystem do we have here?

A. Answers will vary depending on the set of cards chosen (pond, forest, prairie).

NOTE: The pond ecosystem is used as the example here.
5. When the food chains are assessed and accurate:
 - a. Ask all the producers to please raise their hands. Check for accuracy, acknowledge their hands and allow them to put them down.
 - b. Ask all the consumers to please raise their hands. Check for accuracy, acknowledge their hands and allow them to put them down.
 - c. Ask all predators to please raise their right hand and keep them up.
 - d. Ask all prey animals to please raise their left hand and keep them up. Have students check each other for accuracy.

Q. Why are some of you holding both hands up?

A. They are predators because they hunted and ate another animal/consumer, but they became prey when they were hunted and eaten by another consumer. Consumers at the end of each chain should not have their left hands raised because they have not been eaten.

Q. What is the difference between a predator and a prey?

A. Prey is defined as an animal that is hunted by another animal. Predator is defined as an animal that hunts and eats other animals.
6. Refer to one chain. [For example:]

Sun ➡ algae ➡ tadpole ➡ fishing spider ➡ green frog ➡ northern water snake ➡ great blue heron

Q. Trick question: When would algae be considered a predator or prey?

A. NEVER! Algae is a producer/plant that does not hunt or eat anything. Instead it gets its energy directly from the sun.

Q. What is the tadpole and why?

A. Although the tadpole may move about in search of food (algae), it doesn't hunt or eat other animals. The tadpole is an herbivore, and it gets its energy from the algae which received its energy from the sun.

Q. What happened to this tadpole?

A. It was eaten by the fishing spider.

Q. If it were hunted and eaten, how would we describe the roles this tadpole played in this pond ecosystem?

A. The tadpole played the roles of consumer, herbivore and prey.

Q. What roles did the fishing spider play in the ecosystem?

A. The fishing spider played the role of consumer and carnivore, but it also played the role of predator because it hunted and ate its prey, the tadpole. As a predator, it helped pass energy up through the food chain.

Q. What came next in this food chain and what role(s) did it play in this pond ecosystem?

A. The green frog is next. It hunted and ate the fishing spider. It played the roles of consumer, carnivore (because it eats animals only) and a predator (because it hunted and ate the fishing spider.) As a predator, it helped pass energy up through the food chain.

Q. Hold on! We just said the fishing spider was a predator. If the green frog hunted and ate the fishing spider, what does that make the fishing spider?

A. Prey. The fishing spider played the role of predator when it hunted and ate the tadpole, but it also played the role of prey when it was hunted and eaten by the predator green frog. Now the fishing spider roles include consumer, carnivore, predator and prey, and it helped to pass energy up through the food chain.

Q. Now we have the green frog eaten by the northern water snake. What roles did they play?

A. The northern water snake is the predator because it hunted and ate the green frog, and the green frog was a predator when it ate the fishing spider but has now become the prey. The green frog plays the role of consumer, carnivore, predator and prey. The northern water snake plays the role of consumer, carnivore and predator. As predators, both the green frog and the northern water snake helped to pass energy up through the food chain.

Q. This northern water snake had a green frog meal, but what has now happened to the snake?

A. The northern water snake was a predator when it hunted and ate the green frog, but now it is a prey animal because the great blue heron hunted and ate it. The great blue heron is a predator. The northern water snake roles were consumer, carnivore, predator and prey. The great blue heron roles were consumer, carnivore and predator. As predators, both the northern water snake and the great blue heron helped to pass energy up through the food chain.

7. To reinforce the predator/prey concept and relationships, have each chain *chant* the relationship between each link beginning with the top (or last) consumer in each chain. For example:

Great blue heron: I am the predator heron that ate the prey snake

Northern water snake: that was prey to the heron but predator to the frog...

Green frog: that was prey to the snake but predator to the spider...

Fishing spider: that was prey to the frog but predator to the tadpole...

Tadpole: that was prey to the spider but only ate the algae...

Algae: that produced its own food with energy from the sun...

Sun: I am the sun that started it all!

8. Discuss with students how predators could be removed from a food chain (disease; flooding; over hunting/fishing or illegal hunting/fishing, etc.)

9. Move through at least three food chains and remove one or more predators from each one.

Q. What might happen to each food chain if these predators were to disappear?

A. Prey/herbivore populations would have fewer predators and would thrive and increase in number. Increased numbers in populations of herbivores might eat so many plants that the herbivores eventually have difficulty finding enough food, and their population numbers could be affected.

10. Repeat this exercise by having all the animals that would never be predators (herbivores) raise their hands and remove them from the food chain. Discuss how this might affect an ecosystem.
11. Collect the *Ecosystem Cards* and continue with the other two ecosystems *OR* use two future class sessions to repeat this activity for the two remaining ecosystems.

wrap-up/formative assessment

In their pond, forest and prairie *Big Charts*, have students place an X or a check mark under either the "Prey" or "Predator" column or both columns for each animal organism listed.

Have students revisit their *Big Chart: Schoolyard Ecosystem* to place an X or a check mark under the "Prey" or "Predator" columns for their schoolyard animal organisms.

activity 6.2 : predators—they're part of the picture

estimated time 30 minutes

objectives

Students will be able to

1. Explain why predators and prey are important to energy flow in a food chain.

teacher preparation

This activity addresses common misconceptions about predators: they're all fearsome, dangerous, ruthless, etc. It also addresses common misconceptions about prey animals that may also be predators: they're innocent, cute, not dangerous at all, etc.

Prepare three columns on the second page of a flip chart or on a section of white board with the headings: "Predators," "Predator Adjectives" and "Predator Verbs." Flip over and prepare the first page of the flip chart or prepare another area on the white board away from the first three columns with two columns labeled: "Prey Animals" and "Prey Adjectives."

materials

Science notebooks

Big Charts

Pencils

Flip chart/white board

Markers

procedure

1. Instruct students to prepare two pages in their science notebooks with the columns and headings as described above.
2. Ask students to name some common Missouri pond, forest or prairie prey animals (Ex: rabbits, white-breasted nuthatches, mallard ducks). List these on the flip chart/white board under the "Prey Animals" heading. Instruct students to list them in their science notebooks under the appropriate heading.
Q. In which ecosystem would each of these animals most likely be found?
A. Answers will vary. Have students refer to their three ecosystem *Big Charts*, if necessary.
Q. How do you know these are prey animals?
A. All of the listed animals should be animals that are hunted and eaten by other animals.
3. Ask students to suggest adjectives to describe these animals (Ex: soft, innocent, quiet, feathery, cute) and add these to the flip chart/white board under the "Prey Adjectives" column. Students should list these in their science notebooks.
4. Have students work in small groups to add any other adjectives/prey animals. Instruct students to describe any five listed prey animals using the adjectives on the list *OR* assign an equal number of prey animals to each group. Have each group share their descriptions with the class (Ex: quiet rabbit, tiny, soft white-breasted nuthatch, gentle mallard).
5. Referring to the second flip chart page, have students name predators that would be found in a Missouri pond, forest and prairie ecosystem. (Ex: bobcats, black rat snake, coyotes, yellow garden spider, largemouth bass, predaceous diving beetle) List these on the second page of the flip chart/white board under the heading "Predators." Students should list these in their science notebooks.
Q. In which ecosystem would each of these animals most likely be found?
A. Answers will vary. Have students refer to their three ecosystem *Big Charts*, if necessary.
Q. How do you know these are predators?
A. All of the listed animals should be animals that hunt and eat other animals.
6. Have students suggest adjectives that describe predators (in general) (ex: fearsome, deadly, ferocious, dangerous, sneaky, vicious, terrifying, frightening, evil) and verbs that describe how predators eat their prey (ex: devour, rip apart, tear apart, shred). List these under the appropriate columns on the second flip chart page/white board. Students should list these in their science notebooks under the appropriate headings.

7. Have students work in small groups to add any adjectives/predators. Instruct students to describe any five listed predator animals using the adjectives and verbs on the list *OR* assign an equal number of predator animals to each group. Have each group share their descriptions with the class (Ex: evil coyote, sneaky black rat snake, terrifying fishing spider).
8. Have students turn to the back of their science notebooks and identify and describe the animal (flying squirrel) illustrated there (Ex: cute, funny, acrobatic, cuddly, soft and furry, quiet).
 - Q. What kind of consumer is a flying squirrel?**
 - A. Flying squirrels are omnivores.
 - Q. If flying squirrels are omnivores, that means they eat producers *AND* other consumers. If they eat other consumers, what does that mean?**
 - A. It means they are predators.
9. Using adjectives and verbs from the predator columns, ask students to create sentences to describe the flying squirrel (Ex: The deadly flying squirrel tore apart the acorn. The ferocious flying squirrel crept up behind the baby bird in its nest and ripped it apart with its sharp teeth.).
10. Refer to the prey animal list. Point to each animal and circle it if students decide it is an omnivore. Have students work in groups to create descriptions of omnivores by combining each omnivore with a predator adjective (Ex: evil salamander, ferocious greater prairie-chicken, sneaky grasshopper sparrow).
11. As groups share their descriptions, discuss each one.
 - Q. Just how fearsome is a salamander? How evil is a grasshopper sparrow? How terrifying is a flying squirrel? Which is more terrifying: a pileated woodpecker eating a termite or a greater prairie-chicken eating a prairie mound ant? Which is sneakier: a coyote creeping up on a rabbit or a grasshopper sparrow hunting a grasshopper?**
 - A. Answers will vary. Any predator might seem terrifying to someone watching it hunt and eat its prey, but some of those prey animals that are omnivores probably seemed just as terrifying when they hunted and ate their prey.
12. Sum up the activity by reminding students that predators are some of the most misunderstood animals in the world. Predators aren't necessarily mean and vicious. They are just trying to survive like all other animals, and hunting other animals to eat takes care of one of their basic needs—the need for food. Often predators are hunted by other animals and become the prey. Prey may appear cute, quiet, innocent, etc., but many prey animals are also predators.
13. [Assign for homework or] have students work in small groups to use the adjectives and verbs from the “Predator Adjectives” and “Predator Verb” lists to create full sentences to describe each listed predator from the “Predators” list and each circled omnivore on the “Prey Animals” list (or a certain number of the listed predators/omnivores). Encourage students to be accurate about what the predators are eating but to be creative and to have fun. (Ex: The sneaky coyote tore apart the baby turkey. The evil and deadly grasshopper sparrow ripped the innocent grasshopper to shreds. The terrifying yellow garden spider sucked the life out of the trapped dragonfly that had just gorged itself on an unsuspecting butterfly.)

wrap-up/formative assessment See *Wrap-Up/Formative Assessments* in the Teacher Notes section of the introductory material to choose a strategy that meets student needs.

Used and adapted with permission from Linda Chorce at the Missouri Department of Conservation Springfield Conservation Nature Center.

activity 6.3 : humans—at the top

estimated time 30 minutes

objectives

Students will be able to

1. Sequence the flow of energy through pond, forest and prairie food chains beginning with the sun.
2. Explain the roles humans play in pond, forest and prairie ecosystem food chains.
3. Give examples of how humans as predators affect pond, forest and prairie ecosystems.

teacher preparation

This is an outdoor activity and will require a large, open area. This activity will require the use of all three sets of *Ecosystem Cards* used in Lesson 5 including the three Human cards and the decomposer and scavenger cards. Only one Sun card will be needed. This activity functions as a culminating activity for all concepts and information captured by students in their three *Big Charts* (i.e., organisms, producers, consumers, herbivores, carnivores, omnivores, decomposers, scavengers, predators and prey) as well as the concepts of humans as part of pond, forest and prairie ecosystem food chains and of humans as predators in those food chains.

Students will represent the organism on their card and determine their roles in a food chain by referring to and interpreting all the information provided on their cards. Each food chain should reflect one of the three ecosystems, and students should be able to identify whether they are linked within a pond, forest or prairie ecosystem food chain.

Prepare cards ahead of time. The number of producer cards used will determine the number of food chains created. The chart below is provided as *an example* of ways to combine the three sets of *Ecosystem Cards* to allow for at least six food chains. The Sun card must be included, and at least one Human card and two or more of the “cross-over” organisms (badger, bobcat, great horned owl, green darner dragonfly, pileated woodpecker and white-tailed deer) plus the decomposers/scavengers should be included as consumers.

| Number of students | Sun | Pond ecosystem | | Forest ecosystem | | Prairie ecosystem | |
|--------------------|-----|----------------|-----------|------------------|-----------|-------------------|-----------|
| | | Producers | Consumers | Producers | Consumers | Producers | Consumers |
| 30 | 1 | 3 | 7 | 3 | 7 | 2 | 7 |
| 25 | 1 | 2 | 6 | 3 | 6 | 2 | 6 |
| 20 | 1 | 2 | 4 | 2 | 4 | 2 | 5 |

* Suggestion: If more than one class has adopted the *Nature Unleashed* unit, combine all the classes and increase the number of *Ecosystem Cards* used to increase the number of food chains, increase the length of food chains *OR* create several separate sets of food chains by adding one or more Sun cards.

This activity brings all the concepts and ecosystems together as well as introduces humans into the picture and challenges students to incorporate all their acquired knowledge into the links of each and every food chain. Lesson 5 and Lesson 6 (*Activity 6.1*) provided students with ample opportunities to create food chains using individual ecosystems. Therefore, it is suggested in this activity that students be given the opportunity to work together to create these all-inclusive food chains independent of the teacher.

materials

Science notebooks

Pencils

Thermometers

Pond, Forest and Prairie Ecosystem Cards (including Human cards)

Ecosystem Cards Comprehensive Key (Appendix I)

6–8 balls of yarn (optional)

procedure

1. Have students complete the heading in their science notebooks and take and record the outside air temperature.

2. If used, place the balls of yarn in the center of the open area. Shuffle the prepared *Ecosystem Cards* and distribute one card to each student. Make certain that the Sun card is included as well as enough Human and “cross-over” organism cards (badger, bobcat, great horned owl, green damer dragonfly, pileated woodpecker and white-tailed deer).
3. The cards indicate exactly what organisms the students are to represent and what organisms they eat. Students representing plants will have cards that provide information that helps them deduce that they are producers. Instruct students to read their cards very carefully because all three ecosystems (pond, forest and prairie) organisms are mixed in together, and they will be sent to the decomposition area if they link up incorrectly in a chain.
4. Indicate a place off to the side of the group as the place for unlinked/decomposing organisms. Ask students to give the place a name. **Throughout this entire activity, send any students incorrectly (based on the information on their cards) linked to a food chain to the decomposition area.**
5. Address any questions students may have about the words on their cards but be careful not to provide key information regarding whether or not they are producers, herbivores, carnivores, omnivores, predators, etc.
6. Instruct students to work together to create as many food chains as possible, incorporating as many organisms as possible into each chain. Prompt them with procedures used in Lesson 5 and in *Activity 6.1* when necessary. Students should stand in clear, straight rows radiating from the sun.
7. Once as many students as possible are linked into chains, have organisms in each chain state what organism they represent and have unlinked students assess each chain. Incorrectly linked organisms should step aside, and any of the formerly unlinked students may replace them when possible.
8. When the food chains are briefly assessed and accurate, ask all the producers to move their hands side to side over their heads (as if they were plants swaying in the breeze). Have students check each other for accuracy.
Q. Why do you think you are producers?
 A. [These students] have cards that show they are plants, and plants use the energy directly from the sun to make their own food.

 Have producers stop moving their hands.
9. Ask all the consumers to “take a knee” (get down on one knee). Have students check each other for accuracy.
Q. What does it mean to be a consumer?
 A. Consumers are organisms that must eat other organisms in order to get energy to survive.

 Have students return to a standing position.
10. Ask all students who are organisms that eat only plants to clap their hands. Have students check each other for accuracy.
Q. If you eat only plants, what kind of consumers are you?
 A. Herbivores!

 Have students stop clapping their hands.
11. Ask all students who are organisms that eat only meat to roar.
Q. If you eat only meat, what kind of consumers are you?
 A. Carnivores!

 Have students stop roaring.
12. Ask all students who are organisms that eat both plants and meat to clap their hands like herbivores, roar like carnivores *AND* jump up and down. Have students check each other for accuracy.
Q. If you eat both plants and meat, what kind of consumers are you?
 A. Omnivores!

 Have students stand quietly.

13. Address the class:

Q. Which organisms have been standing quietly this whole time?

A. Answers may vary. Decomposers and scavengers may not have participated with the other consumers, and unlinked students have been in the decomposition area. The student with the Sun card has been standing quietly, but he/she is not an organism.

14. Have all decomposers and scavengers in the food chain as well as students in the decomposition area say, "Mmmmmmmmmmmmm good!"

15. One time all together: Have students continue doing their motion or sound as you add each group. Everyone should be doing something at the same time by the end:

- a. Producers, sway your hands in the breeze over your heads.
- b. Herbivores, clap your hands.
- c. Carnivores, roar.
- d. Omnivores, clap your hands, roar and jump up and down.
- e. Decomposers and scavengers, say, "Mmmmmmmmmmmmmmm good!"

16. Have students return to standing quietly in their food chains.

17. Address the class:

- a. Ask all predators to please raise their right hand and keep them up. Have students check each other for accuracy.
- b. Ask all prey animals to please raise their left hand and keep them up. Have students check each other for accuracy.

Q. What role has each of you been playing in your food chains?

A. Answers will vary. Prey animals have provided energy to the predators who have consumed them. Predators have gained energy from their prey to survive. Predators and prey have helped to move energy up through food chains. A balance between predators and prey is important to help control animal populations, keep food chains strong and ecosystems healthy and balanced.

Q. Why do some of you have both hands up?

- A. These animals are both predator and prey. They are predators when hunting for food and prey animals when something hunts them.
- c. Have all predators and prey high five each other and put their hands down.

18. Address the class:

Q. Where are the humans in these food chains?

A. Have the humans raise their hands.

Q. What roles are you playing in your food chains?

A. Answers may vary. Humans would be consumers, omnivores and predators. Humans would move energy up through a food chain.

Q. How has each student holding a human card played the role of predator?

A. Answers may vary but could include:

A student with a Human card:

| Linked to | Could have been linked because... |
|---------------------|--|
| A white-tailed deer | He/she was a deer hunter. |
| A bluegill fish | He/she was fishing, caught bluegill and ate them for dinner. |
| A wild turkey | He/she was a turkey hunter. |
| A green frog | He/she had been gigging for frogs the night before and was serving frog legs for dinner. |
| A raccoon | He/she trapped a raccoon to eat the raccoon meat and to sell its pelt at an auction. |

Q. Humans act like predators when they hunt. What might happen if humans stopped hunting white-tailed deer in Missouri?

A. Answers will vary. When people hunt white-tailed deer in Missouri, they help control the population of white-tailed deer and help keep the ecosystems healthy and balanced. Too many large populations of white-tailed deer can cause serious damage to farmers' crops, wildflower gardens, the understory plants in forests, etc. An overabundance of white-tailed deer in urban areas often result in deer-vehicle accidents.

Q. Where are all the human organisms located in these food chains?

A. They are all the last ones in a food chain.

Q. Why are they last?

A. Humans are at the top of food chains because they are not prey to any predators. They are the top predators and top consumers.

19. Address the class:

Q. Look over each organism linked in your food chain. Based on the kinds of organisms, in which ecosystem would your food chain most likely be found: a pond ecosystem; a forest ecosystem; or a prairie ecosystem?

A. Answers will vary based on the organisms in each food chain. Have students check each other for accuracy.

20. [Similar to the end of *Activity 6.1*] To reinforce all the concepts and relationships and to bring the activity to a “rousing” conclusion: In each food chain, have each link **chant its relationship** with the link next to it beginning with the top (or last) consumer in each chain **while doing the motion assigned to each earlier in the activity (carnivores should roar before and after they chant their relationship)**. When each chain has “performed,” they should stand quietly while the next food chain takes their turn. For example:

Human: [*Jumping up and down and clapping hands=omnivore*] I am a human and I am predator that hunted and ate the wild turkey.

Wild turkey: [*Jumping up and down and clapping hands=omnivore*] I am the wild turkey that was prey to the human but was predator to the tiger salamander.

Tiger salamander: [*ROAR!*] I am the tiger salamander that was prey to the wild turkey but was predator to the sowbug. [*ROAR!*]

Sowbug: [*Mmmmmmmmmmm good!=decomposer/scavenger*] I am the sowbug that was prey to the tiger salamander while eating the decaying leaves of the mayapple. [*Mmmmmmmmmmm good!*]

Mayapple: [*Moving hands back and forth over his/her head.*] I am the mayapple that produced its own food with energy from the sun.

Sun: I am the sun that started it all!

ENTIRE FOOD CHAIN: We are found in a forest ecosystem!

21. Continue until each food chain has completed its “performance.” Have all food chain components give the organisms in the decomposition area a round of applause for “breaking down” and returning nutrients to the soil.

wrap-up/formative assessment See *Wrap-Up/Formative Assessments* in the Teacher Notes section of the introductory material to choose a strategy that meets student needs.

optional activity 6.a : hike through the regulations

teacher preparation

1. Use Internet (www.mdc.mo.gov/hunt/) for a virtual hike through the deer, turkey and/or fishing regulations or have paper copies for students, which are available at all Missouri Department of Conservation offices and vendors of fishing and hunting permits.
2. Familiarize yourself with the contents of the regulation booklets or Web site.
3. Choose key items you think are important for students to know and/or to be able to find. (Ex: hunting/fishing seasons; limits; lengths; Share the Harvest information; hunting safety guidelines, etc.)

procedure

1. Name an item you want students to find.
2. The first student/group of students to find an item should raise their hands, tell what page the item is on, how they found it, and read the item to the class.
3. Continue this way through one or all of the regulation booklets.
4. Award points to students/groups as they discover an item correctly and provide accurate information.

so, what do you know?—lesson 6

1. What is the definition of predator?

- a. Animal that is hunted by other animals.
- b. Animal that hunts for other animals.
- c. Animal that hunts for plants.
- d. Animal that produces its own food.

2. What is the definition of prey?

- a. Animal that is hunted by other animals.
- b. Animal that hunts for other animals.
- c. Animal that hunts for plants.
- d. Animal that produces its own food.

3. In the prairie food chain below, circle prey and underline predators.



4. In the prairie food chain above, predict what might happen if the ground squirrel population disappears.

5. In the forest food chain below, circle prey and underline predators.



6. In the pond food chain below, circle prey and underline predators.



7. In the pond food chain pictured above, predict what might happen if the crayfish population disappears.

8. What role do predators and prey fill in any food chain?

- a. They are decomposers in an ecosystem.
- b. They produce energy from the sun.
- c. They are the clean-up crew in an ecosystem
- d. They pass energy up through the food chain.

9. Some humans are vegetarians (herbivores) but most are omnivores. Some humans hunt for food. List one example where humans as predators have had a positive impact on an ecosystem.

10. Why do predators hunt?

so, what do you know?—lesson 6

answer key

1. What is the definition of predator? (1 point)

answer —b. Animal that hunts for other animals.

2. What is the definition of prey? (1 point)

answer —a. Animal that is hunted by other animals.

3. In the prairie food chain below, circle prey and underline predators. (1 point each; maximum 6 points)

answer —Prey: katydid, thirteen-lined ground squirrel, kingsnake; Predators: thirteen-lined ground squirrel, kingsnake, hawk



4. In the prairie food chain above, predict what might happen if the ground squirrel population disappears.

possible answers (4 points for any one of the answers below)

- The katydid population might increase a lot because no ground squirrels are eating them.
- The prairie kingsnake population might decrease because there are no ground squirrels to eat. With a decreased population of snakes, the hawk population could find it harder to get enough food to eat.
- Or other plausible answer

5. In the forest food chain below, circle prey and underline predators. (1 point each; maximum 4 points)

answer —Prey: cicada, turkey; Predators: turkey, snake



6. In the pond food chain below, circle prey and underline predators. (1 point each; maximum 6 points)

answer —Prey: tadpole, dragonfly nymph, crayfish; Predators: dragonfly, crayfish, bass



7. In the pond food chain pictured above, predict what might happen if the crayfish population disappears.

possible answers (2 points for any one of the answers below)

- The dragon nymph population might increase and eat more tadpoles. This could decrease the tadpole population.
- The bass may not have enough food to eat which means the bass population could decrease.
- Or other plausible answer

8. What role do predators and prey fill in any food chain? (1 point)

answer —d. They pass energy up through the food chain.

9. Some humans are vegetarians (herbivores) but most are omnivores. Some humans hunt for food. List one example where humans as predators have had a positive impact on an ecosystem. (2 points)

possible answers

- Humans who hunt deer help reduce the deer population. This can help reduce the number of deer involved in car accidents.
- People who hunt or trap raccoons help keep the raccoon population healthy and balanced. When there are too many raccoons in an area, they can get distemper, which is a serious disease that spreads quickly.
- Other examples may be acceptable.

10. Why do predators hunt? (1 point)

answer —To survive; for food to survive